

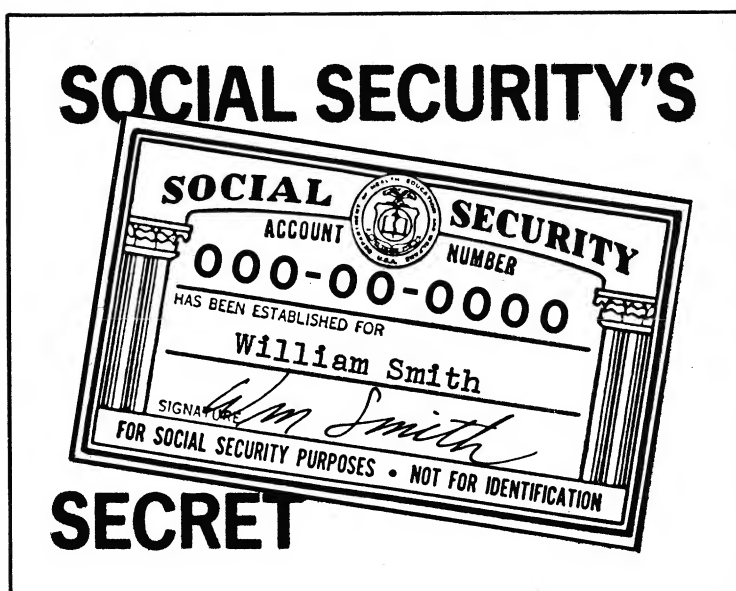
PMI

PHOTO METHODS FOR INDUSTRY



EDWARD ROSSE
*Management Analysis Officer
of the
Social Security Administration.*

The world's largest splicing operation under one roof.



flexible, quickly amended records on microfilm

There is a "secret" to making microfilm work for private organizations as well as government agencies. That secret is the updating of microfilmed records. If you can keep your microfilmed records current by updating them as often as is needed, you will have a working tool that will save money, time, space, personnel and most of your searching problems.

At the Division of Accounting Operations of the Social Security Administration in Baltimore, we have over 650,000 reels and magazines of microfilm in our files. We use over 1,400 microfilm readers of various types to make tens of thousands of daily references to this film. We also use about 60 splicing tables to make a quarter of a million splices per month in the updating of these films.

Let us examine two of these film files and the part they play:

Who makes what, when

One of our large and important film files is the *Individual Earnings Record*. The magnetic tapes which contain the data from the Employer Earnings Reports are processed through an electronic computer which reads the new tapes and previous master tapes and prepares an updated tape which shows, by social security account number, each person's earnings during the past quarter, his total earnings to date, and the various details needed

to analyze the account. The tapes are then fed into a special electronic camera which reads the magnetic spots, converts them to legible characters and displays them, one character at a time, on a cathode ray screen. A camera faces the screen in the dark and as the characters appear on the screen, they are recorded on the 16mm film. The speed of this machine is such that approximately 5,000 lines of 128 characters each are recorded on the film every minute. At the end of each thousand series of accounts, the camera spaces the film and automatically records on it a target showing the identity of the file and the year and period. One thousand accounts are recorded on approximately seven inches of film.

After the film is processed, two duplicate copies are prepared from it on a heat-processed polyester film base at a rate of 140 feet per minute, ready for use. The original film becomes our master film and is stored in 1000-foot rolls in an underground records center in a safe location. The two duplicate films are cut up into strips of 1,000 accounts each and spliced onto previously set-up similarly numbered film magazines. Each of these magazines, which have a capacity of 100 feet of film, is sufficient for the entire lifetime earnings records of 1,000 individuals. Thus to refer to any individual's earnings record, we insert the proper magazine in the

slot of an electronically controlled film reader, move a lever which automatically engages the film and projects the images on the screen. The outer strand of film contains the latest quarter or posting cycle, and as we keep moving the film in the reader, we get to the older quarters in detail, all the way back to 1937, when our recordkeeping system began.

The name sounds familiar

A second file of great importance to our system is the *National Employee Index of Account Card Holders*. This index is arranged by Soundex code which, within each surname letter, groups together all surnames having the same basic consonant sounds and provides a code for it. Thus, Snyder, Snider, Sneider and Schnider, or Smith, Smythe, Smidt or Schmidt are in one code group. Then within each code group the first and middle name are arranged alphabetically and then in order by date of birth.

This index contains the codes, names, dates of birth and social security account numbers of all account card holders. It also has changes in name of women who get married or divorced and men who adopt a new name, and also changes in dates of birth reported by individuals after they obtained their card. It is used for locating the account numbers of persons who apply for a duplicate account card, for crediting the accounts of individuals who are reported with incorrect numbers or without numbers, and for many other purposes of identification. At the present time, there are about 192 million names in this index and the accretions amount to six to seven million names per year. The daily reference rate to this index varies between 20,000 and 40,000 items.

Here is the combined electronic and film system we developed and put into effect. We froze the file, one letter at a time and microfilmed it. When accretions were received for the frozen letters, we simply accumulated them and converted them to magnetic tape with the items again arranged by Soundex code. Microfilming of the original panels was programmed to provide film breaks after each group of approximately 650 panels (1,300 sides). This scaled the entire file down to 2,005 numbered magazines, with additional capacity in each magazine for twenty years of ac-

cretions. The magnetic tape of the accretions, which was programmed with the same file breaks and magazine numbers as the basic film, was processed through our cathode ray camera which produced a film. This film was spliced on to the beginning of the basic file films. In each subsequent month, a tape is again made of the accretions and by interfilming it electronically through the computer with the tape of previous months, a new tape is produced which includes all accretions from the beginning of the freeze. The new tape is again filmed and the new film replaces the old accretion film in each magazine.

In searching the file, the operator simply slips the magazine into the semi-automatic reader and searches for the name in the old file. If the name is not located there, then the accretion segment is examined on the same film and the item is located there. This, in effect, is much faster than a dual reference would be in two different files since only one handling is involved. An average of only 30 seconds is required to locate an item.

Results

I should now like to sum up the results of the conversion from our previous system to microfilm.

Cost: Entire cost of conversion was considerably less than the cost of a single five-year leveling of the file. Cost of the monthly updating also is much less than the old interfilming and maintenance costs.

Space: Entire operation is comfortably housed in 25,000 square feet of space, and no additional space will be required for the next 20 years. The old file occupied 30,000 square feet under extremely crowded conditions, and an addi-

tional 7,000 feet would have been required every five years.

Employee Morale: The work in the new file is performed under comfortable "office conditions" with a drawer provided in each desk for the employee's personal effects, i.e., pocketbook, lunch, etc. In the old file, the employees did not have a fixed station and the work consisted of constant walking, stooping and reaching. The top tier could only be reached by stepping on a small ladder and the bottom tier by sitting on a low stool.

Accuracy: Because of good working conditions, the job is considerably less tiring, and accuracy is consequently much greater. In addition, there are no misfiles on the film, as there were in the previous system and the production rate is much higher.

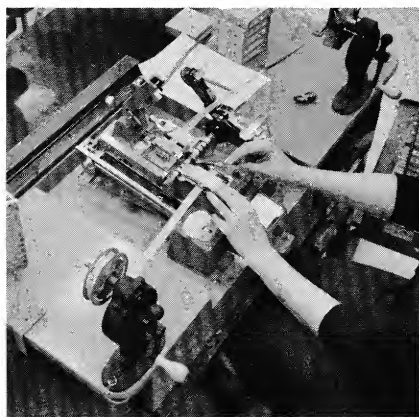
Splicing method

Polyester gains its great strength from a process known as "prestressing" which aligns all the molecules in a single plane. When this film is melted, as in the welded splice the molecules tend to return to their original alignment and the film at the splice loses its extra strength. Another problem was the intermixing of acetate and polyester in the existing files, as the two bases are not compatible to heat sealing or cementing. The first answer to this problem was the development of a self-adhesive mylar tape about .003 of an inch thick and 1/8 inch wide. It was applied to two diagonally cut film ends on both sides by means of a jig. This solution was like going back to the old cementing method. The splice was twice the thickness of the film, the process was slow and the tape tended to catch in the

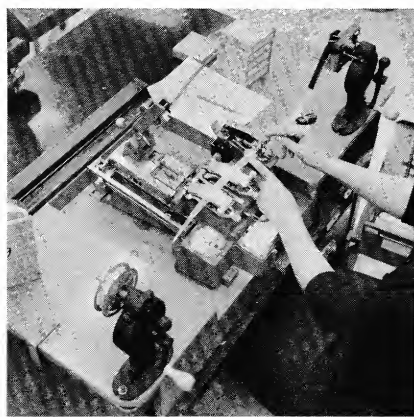
readers and break the film. It was obvious that a new approach was required. After a lot of experimentation on the part of various companies, a solution became apparent and was developed by one of the companies.

This consists of a splicing unit that contains a magazine with several rolls of polyester based, coated, 1/8 inch wide reinforcing tape. The special coating on the tape is sensitive to heat and pressure and becomes activated at a temperature much lower than the flow point of either acetate or polyester, and yet is compatible to both type bases. This preserves the molecular arrangement of the film and hence its strength. The unit automatically supplies precut lengths of this tape to the splicing block to cover both butted sides of the film. When the heat is applied, the coating chemical flows into the film and creates a strong bond. The pressure compresses the tape into the film so that there is less than .003 of an inch thickness added to the splice. — EDWARD ROSSE (*Mr. Rosse is the Management Analysis Officer of the Social Security Administration.*)

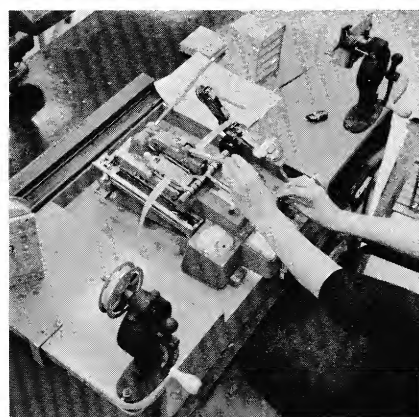
Equipment mentioned in this article: *Cathode Ray Camera*—IBM Special Microfilm Printer No. 9401 • *Electronic Computers*—IBM Computers Model 705 III, 7080 and 1401 • *Heat Processed Film*—Kalfax Corporation—Kalfax Film • *Magazine Film Readers*—Recordak Lodestar Readers and Magazines • *Splicing Equipment*—Prestoseal Manufacturing Corporation's "Miracle" Presto-Splicers for butt-weld splicing; "Hercules" Presto-Splicers for intermixing splicing; Prestoseal Tape Cartridges.



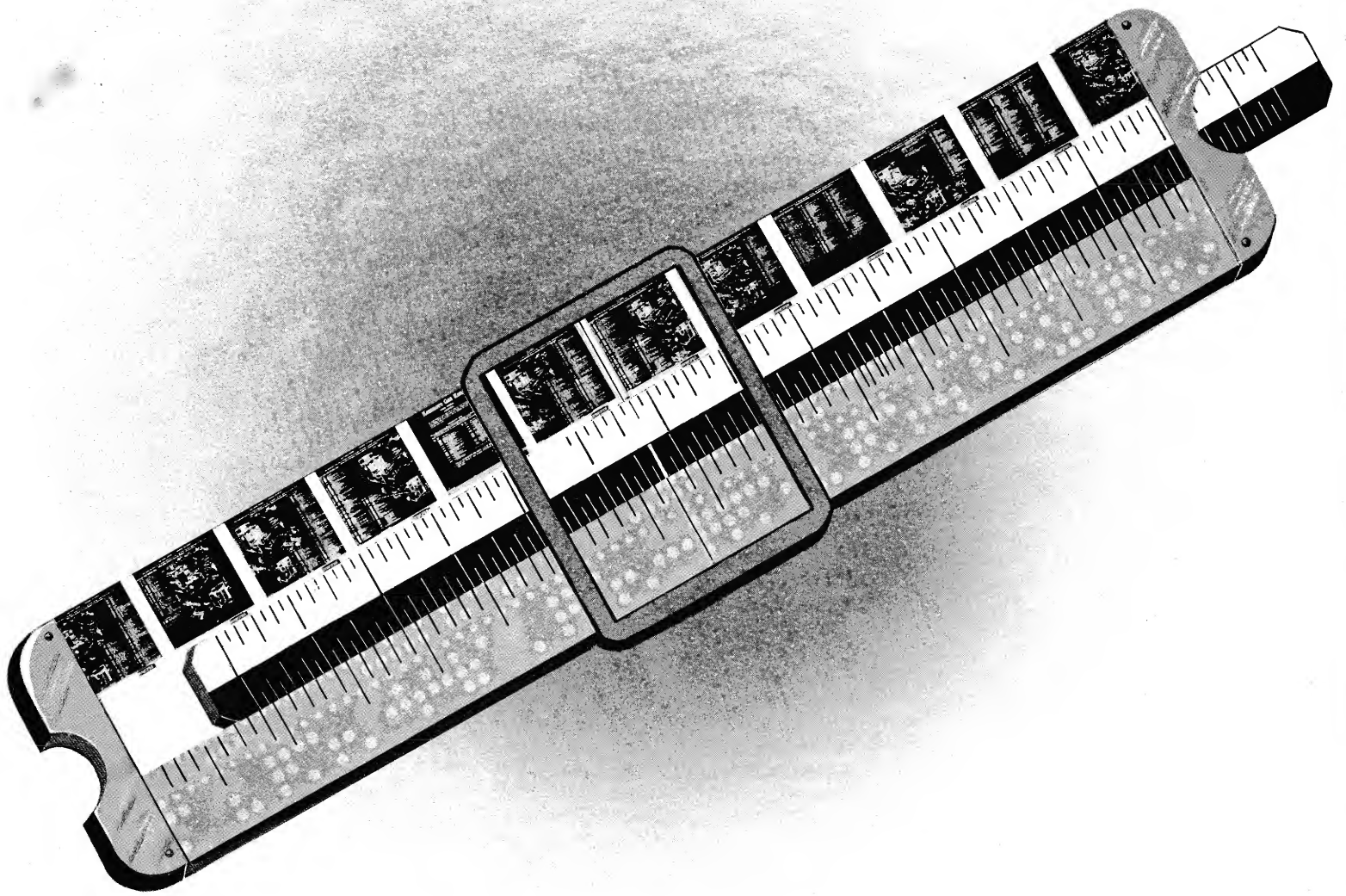
Splicing method that keeps Social Security records up to date is three-



step. 1. (left) square butt cut is made. 2. (above) 1/8-in. tape is wrapped



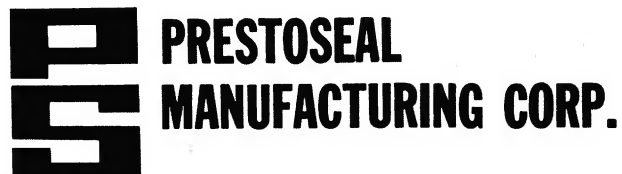
around splice. 3. (above) heat and pressure bond joint. Time: 45 sec.



Customer Service Department

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